UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte JOHN C. PARKS, DAVID H. KNOEBEL
LAWRENCE M. JENKINS, GEORGE H. RANSFORD
GARY L. BOWMAN JR. and
SAADAT HUSSAIN

Appeal No. 2005-0407
Application No. 09/888,246

ON BRIEF

Before OWENS, KRATZ, and PAWLIKOWSKI, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal is from a rejection of claims 1, 2 and 4.

THE INVENTION

The appellants claim a wet cake[1] that comprises a solid brominated diphenylethane product and has an occluded free

[1] The appellants disclose that "[t]he undried solids recovered from the slurry are referred to herein by the term 'wet cake'. This term is not meant to be restricted by any particular manner of solids recovery and/or by ancillary treatments of the slurry or recovered solids, e.g., neutralization, washing and the like" (specification, page 13, paragraph 0044).

bromine[2] content within a specified range. Claim 1 is illustrative:

1. A wet cake comprising water and a solid brominated diphenylethane product, which product contains a predominate amount of decabromodiphenylethane, the wet cake having an occuluded free bromine content of from about 500 ppm to about 2000 ppm.

THE REFERENCE

Mack et al. (Mack) 5,457,248 Oct. 10, 1995
(effective filing date on or before Apr. 7, 1994)

THE REJECTION

Claims 1, 2 and 4 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mack.

OPINION

We reverse the aforementioned rejection. We need to address only claim 1, which is the sole independent claim.

Mack discloses that the color of a brominated diphenylalkane product which can approach 100% decabromodiphenylalkane is improved by including chelating or complexing agents in the water used to isolate the product from the reaction mixture used to

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[2] The appellants disclose that "[t]he term 'occluded free bromine' refers to that bromine which is tightly held by the recovered decabromodiphenylethane product component of the wet cake so that ordinary washing techniques are insufficient to reduce its content in the product" (specification, page 13, paragraph 0046).

prepare it, and by washing the product with water or organic solvents (col. 4, lines 64-66; col. 5, lines 9-37). Applying to the product at least one high temperature aromatic solvent treatment reduces the yellowness index of the product to the range of about 1 to 8 (col. 1, lines 52-64; col. 4, lines 54-56; col. 5, line 56 - col. 6, line 6). Mack indicates that after the product is dried to remove residual solvent, the product can be roasted or oven aged at temperatures above about 200°C to improve the its color (col. 5, lines 58-61; col. 7, lines 31-37).[3] The yellowness indexes of Mack's exemplified products that were dried but not roasted are 45 and 73.4 (examples 1 and 5), and the yellowness index range of Mack's exemplified products that were dried and roasted is 10 to 16.1 (examples 2-4 and 9). The yellowness index range of the appellants' exemplified products

[3] The examiner argues that "the temperature at which the claimed product is dried is similar to the temperature at which the prior art product is oven-roasted, 205°C versus 200°C respectively" (answer, page 5). This argument is not well taken because Mack's oven roasting time is 30 minutes to 9 hours (examples 2-4 and 9), whereas the appellants' wet cake drying time is 2 seconds (specification, page 17, paragraph 0064). The examiner also argues that "[b]ased on the teachings of the prior art and the present disclosure, it is obvious that high temperatures, for example, roasting, are utilized in the removal of excess bromine and, thus, improvement in the color characteristics of the brominated product" (answer, page 5). Mack does not mention removal of excess bromine, and the examiner has not established that the relied-upon disclosure in the appellants' specification is prior art.

prior to oven aging is from about 12.5 to about 17.5 (specification, page 19, paragraph 0073).[4]

The examiner argues that "[t]he motivation to obtain a wet cake having low bromine content is based on the teachings of the prior art of an improvement in the color characteristics of the product and the production of highly thermally stable products" (answer, page 4). Mack, however, is silent as to occluded free bromine content, and the examiner has not provided evidence that it was known in the art that occluded free bromine yellows or hinders the thermal stability of brominated diphenylethanes.

The examiner argues that "[b]ased on the teaching of the prior art of the use of chelating, complexing agent etc. and examples 2-4, the skilled artisan would have the reasonable expectation that the wet cake of the prior art would have similar occluded bromine content as those recited by the instant claims" (answer, page 4). As set forth above, until Mack's exemplified products are roasted they do not have yellowness indexes that are comparable to those of the product in the appellants' wet cake. Mack's exemplified products that are dried but not roasted, which are more indicative of the products in the wet cake than are the

[4] The yellowness indexes of both Mack and the appellants were obtained according to ASTM D 1925 (Mack, col. 11, lines 4-6; appellants' specification, page 19, paragraph 0073).

roasted products in examples 2-4 relied upon by the examiner, have yellowness indexes that are much higher than those of the appellants' product in the wet cake. Moreover, the appellants' disclosed process for making the brominated diphenylethane product differs from that of Mack. The appellants mix bromine and diphenylethane in a molar ratio of bromine to diphenylethane greater than about 5:1, and quickly feed the mixture to a stirrable reaction mass comprising bromine and a bromination catalyst, whereas Mack charges bromine and bromination catalyst to a reaction vessel and slowly adds molten diphenylalkane to the bromine and catalyst (col. 4, lines 12-16). The examiner has not explained why, regardless of this difference in the product preparation methods and regardless of Mack's silence as to occluded free bromine, one of ordinary skill in the art would have reasonably expected Mack's treatments with chelating and complexing agents and solvents to produce a wet cake having an occluded free bromine content within the appellants' recited range.

The examiner argues that "if the color of the wet cake evidences its occluded free bromine content as disclosed by the present specification (see page 14, section 0048) and Mack teaches several treatment methods for improvement in the color of

the brominated product, the skilled artisan would have the reasonable expectation that the prior art wet cake treated as taught by Mack would have low amounts of occluded free bromine content even though the amount is not disclosed by the reference" (answer, pages 5-6). That argument is not well taken because the examiner has not shown that those of ordinary skill in the art knew that the color of a wet brominated diphenylalkane cake evidences its occluded free bromine content or that Mack's treatments are effective for reducing the occluded free bromine of such a cake to a value within the appellants' recited range.

For the above reasons we conclude that the examiner has not carried the burden of establishing a *prima facie* case of obviousness of the appellants' claimed invention.[5]

[5] Thus, the appellants need not provide objective evidence of nonobviousness such as the examiner's proposed comparison of Mack's treated wet cake with the appellants' claimed wet cake (answer, page 5). *See In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 882 (CCPA 1981).

DECISION

The rejection of claims 1, 2 and 4 under 35 U.S.C. § 103 over Mack is reversed.

REVERSED

Terry J. Owens Terry J. Owens Administrative Patent Judge	)
Peter F. Kratz Peter F. Kratz Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND
Beverly A. Pawlikowski Beverly A. Pawlikowski Administrative Patent Judge	) INTERFERENCES

TJO/eld

Edgar Spielman
Albemarle Corporation
451 Florida Blvd.
Baton Rouge, LA 70801